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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/612,839

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Luan C. Tran

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08/27/2004

WELLS ST. JOHN P.S.

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SPOKANE, WA 99201

EXAMINER

LE, DUNG ANH

ART UNIT

PAPER NUMBER

2818

DATE MAILED: 08/27/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/612,839	TRAN, LUAN C.	
	<b>Examiner</b>	<b>Art Unit</b>	
	DUNG A LE	2818	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 3-19, 21-34, 36- 37, 39-46 and 48-62 is/are pending in the application.
- 4a) Of the above claim(s) 11-19, 21-34, 36, 37, 39-46, 48 and 59-62 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 3-10 and 49-58 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 03 July 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |   |  |
|---|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. ____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)            |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>6/24/04, 7/13/04</u> . | 6) <input type="checkbox"/> Other: ____  |

*De*

### **Oath/Declaration**

The oath/declaration filed on 7/3/03 is acceptable.

### ***Specification***

The specification is objected to for the following reason:

The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed (see MPEP § 606.01).

Note that, the claims are directed to a method of making a conductive plug in a capacitor-over-bit line memory array.

The specification has been checked to the extent necessary to determine the presence of all possible minor errors. However, the applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

### ***Election/Restriction***

Applicant's election with traverse of a) *Species I, e.g. Sets of claims 3-10, 58 and 49-57: Method forming a conductive capacitor plug in a capacitor-over bit line memory array* is acknowledged.

Because Applicant did not distinctly and specifically point out the supposed error in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)). Applicant have the right to file a divisional application covering the subject matter of the non-elected claims b) *Species II, e.g. Sets of claims 11- 19: Method of*

*forming contact opening in a capacitor-over bit line memory array; c) Species III, e.g. Sets of claims 43, 39-42, and 44, and 45-46, and 48: Method of forming a memory array; d) Species IV, e.g. Sets of claims 29- 34 and 36-37, 62: Method of forming a capacitor over bit line memory array and e) Species V, e.g. Sets of claims 21-24, 27-28, 59, 60 and 25-26, 61: Etching an array of capacitor contact openings in a capacitor-over bit line memory array.*

The traversal is on the ground(s) that see the election paper. This is not found persuasive because the fields of search for each *Species I - Species V claims* are NOT coextensive and the determinations of patentability of *Species I* to *Species II claims* are different, that is *Species I* to *Species V* limitations are given weight differently in determining the patentability of the claimed inventions. Also, the strategies for doing text searching of each *Species I - Species V claims* are different. Thus, separate searches are required.

The requirement is still deemed proper and is therefore made FINAL.

### **Claim Rejections**

#### **Set of Claims 3- 10 and 58:**

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent

and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Set of Claims 3- 10 and 58 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claim 1 of Patent No. 6,060,351. Although the conflicting claims are not identical, they are not patentably distinct from each other because it would have been obvious to one of ordinary skill in the art at the time of the invention was made to extend conductive material from proximate a substrate node location to a location elevationally above all conductive material of an adjacent bite line, wherein the extending comprises etching a contact opening *through* insulative material after forming said bit line and forming conductive

material within the contact opening by forming a bit line contact, a capacitor plug, and a peripheral plug in a *single masking step* by removing a portion of the first conductive material to outwardly expose remaining first insulating material, and to outwardly expose remaining first conductive material within the first and peripheral contact openings at an uppermost surface of said remaining first conductive material which is elevationally below the surface of the remaining first insulating material in order to define inventive semiconductor device.

**Set of claims 49-57:**

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

**Claims 49- 57are rejected under 35 USC 102 (b) as being anticipated by  
Huang (6137179)**

Huang teaches a method of forming a conductive capacitor plug in a capacitor over-bit line memory array employing shallow trench isolation, the method comprising

extending conductive material from proximate a substrate node location 17 to a location elevationally above all conductive material of an adjacent bit line 26; and

wherein the array comprises a word line (col 4, lines 60-62, figs. 1-4)) elevationally below the bit line 26, and the extending comprises etching a contact opening through insulative material 23 and 28 and generally self-aligned to both said bit line and said word line. (col 6, lines 15-25 and fig. 3)

**Regarding claim 50,** wherein the extending comprises etching a contact opening through insulative material 23-28 after forming said bit line 26 and forming conductive material within the contact opening.

**Regarding claim 51,** wherein the forming of the conductive material comprises forming a storage capacitor 36 (fig. 3) at least partially within the contact opening.

**Regarding claim 52,** wherein the extending comprises etching a contact opening through two separately-formed insulative material layers, at least a portion of the contact opening being generally self-aligned to said bit line 26, and forming conductive material within the contact: opening. (col.6, lines 15- 20 and col 7, lines 33-40).

**Regarding claim 53,** wherein the insulative material comprises two or more separately-formed insulative material layers 23 and 28.

**Regarding claim 54,** wherein the extending comprises: forming a patterned masking layer over the substrate and defining an opening pattern over said substrate node location; etching insulative material through the opening pattern sufficient to form a

contact opening after forming the bit line; and forming conductive material within the contact opening(fig. 2-4 and 6-7)

**Regarding claim 55**, wherein the opening pattern is formed over a plurality of substrate node locations 17 over which individual capacitors are to be formed.

**Regarding claim 56**, wherein the substrate node location comprises a diffusion region, and the extending comprises: etching a contact opening through insulative material 23/28 to substantially expose a portion of the diffusion region 19 after forming the bit line; and forming conductive material 32 within the contact opening and in electrical communication with the diffusion region 17.

**Regarding claim 57**, wherein the insulative material comprises two separately-formed layers of insulative material 23/28.

When responding to the office action, Applicants' are advice to provide the examiner with the line numbers and page numbers in the application and/or references cited to assist the examiner to locate the appropriate paragraphs.

A shortened statutory period for response to this action is set to expire 3 (three) months and 0 (zero) day from the day of this letter. Failure to respond within the period for response will cause the application to become abandoned (see M.P.E.P 710.02(b)).



### Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dung A. Le whose telephone number is (571) 272-1784. The examiner can normally be reached on Monday-Tuesday and Thursday 6:00am- 4:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Nelms can be reached on (571) 272-1787. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9306 for regular communications and (703) 872-9306 for After Final communications.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

DUNG A. LE  
Primary Examiner  
Art Unit 2818

